george w. barton
and Associates

TRAFFIC & TRANSPORTATION ENGINEERS

415 CHURCH STREET

EVANSTON, ILLINOIS

george w. barton
and Associates

TRAFFIC • PARKING • TRANSPORTATION ENGINEERS

October, 1956

The Honorable George E. Mendon
Mayor of the City of Mason City
City Hall
Mason City, Iowa

Dear Mr. Mayor:

We take pleasure in submitting this report of our studies of street traffic and parking in Mason City. Data obtained in the course of this study showed that the street traffic system is inadequate to meet the demands of today's traffic. In the downtown area the supply of parking space is generally adequate to meet existing demands except for limited localized shortages. Trends in population and automobile ownership indicate that both problems of traffic movement and parking will continue to grow in the next five to ten years.

Recommendations are made in this report to remedy existing traffic problems and to provide a street transportation and parking system to meet the needs of a growing community. It is our belief that if the recommendations contained in this report are carried out, the problems of traffic and parking will be minimized in the next few years.

Respectfully submitted,

George W. Barton

George W. Barton

415 CHURCH STREET • EVANSTON, ILLINOIS • GREENLEAF 5-8646

TABLE OF CONTENTS

SUMMARY OF RECOMMENDATIONS

The recommendations offered in this report are as follows.

1. The city should adopt as the official major street plan, the modified street plan shown in Figure 6 of this report.

2. Ordinances should be enacted which designate that trucks making trips through the city without a stop be limited to the officially designated state and county highway routes. Local trucking should be restricted to the officially designated major street system except when it becomes necessary to leave this system for a pick-up or delivery.

3. Convert Federal Avenue to a southbound oneway street between North 6th and South 8th Streets and Delaware Avenue to a oneway street northbound between the same points. In connection with this change the following improvements should be made.

   a. Corner roundings: Increase the radius to 20 feet or more at the following locations.

      Northeast corner of North 6th and Federal
      Southwest corner of North 6th and Delaware
      Northwest corner of South 8th and Delaware
      Southeast corner of South 8th and Federal

   b. Traffic signals to be installed:

      Delaware and North 4th Street
      Delaware and North 1st Street
      Delaware and South 2nd Street
      Delaware and South 5th Street
      Delaware and South 6th Street
      Federal and South 5th Street

   c. Oneway signs and route markings must be installed on the proposed oneway system. Pavements should be laned to facilitate traffic movement.

d. Redesign the south approach at Federal and South 8th Street as shown in Figure 7.

4. Federal Avenue outside the proposed oneway system:

a. North city limits to North 15th Street: Prohibit parking on both sides of the street at all times. Eventually it is desirable that property be acquired to increase the right-of-way to 80 feet, and that a pavement 60 feet wide be provided.

b. North 15th to North 13th Street: Widen the pavement to a minimum of 56 feet and desirably to 60 feet in these two blocks through the acquisition of 9 to 14 feet of right-of-way on the west side of the street.

c. North 13th to North 6th Street: Prohibit parking on both sides of the street at all times. Eventual widening of the pavement to 60 feet on a right-of-way of 80 feet is recommended.

d. South 8th to South 10th Street: Prohibit parking on both sides of the street at all times.

e. South 10th to South 19th Street: Acquire the abandoned railroad right-of-way on the west side of the street, which when added to the present right-of-way will give a total width in excess of 125 feet. This width will permit the construction of two three-lane divided roadways plus a service drive on the west side of the street between the viaduct and South 14th Street. From South 14th to South 19th adjacent to the old fairgrounds now proposed as a shopping center, two three-lane roadways may be provided with a median strip 14 feet or more in width to provide left turn refuges.

f. South 19th to the south city limits: Prohibit parking on both sides of the street at all times. Eventual acquisition of sufficient property to provide a right-of-way 80 feet in

width and a pavement 60 feet wide is also recommended.

5. Downtown traffic signals: It is recommended that the downtown traffic signal system which now consists of signals on Washington, Federal and Delaware including the signals on Federal between North 13th and South 8th, be interconnected with individual controllers at each signalized intersection.

6. The U. S. 18 By-pass: The Iowa State Highway Commission is relocating U. S. route 18. Starting at the east city limits the route will continue west on 4th Street to a point near Carolina, where it will be routed as a oneway system over 5th and 6th Streets as far west as Monroe where it will continue to the west city limits as a twoway route over 5th Street. In the two-way portion of this route on 4th Street it is recommended that the pavement be 48 feet wide if parking is prohibited and 60 feet wide if parking is to be permitted. A pavement width of 60 feet will require the acquisition of additional right-of-way.

7. Extend South Monroe Avenue from South 6th Street to South 19th Street along the east side of the Chicago and Northwestern Railroad tracks. An initial pavement of 48 feet on a right-of-way of 80 feet is recommended.

8. Open a route between Adams and South 2nd Street and President and South 5th. To accomplish this a bridge must be constructed over Willow Creek and a street must be opened across the railroad tracks between Willow Creek and South 5th.

9. Open Carolina Avenue between State Street and North 3rd Street. This opening will require the construction of a bridge over Willow Creek and a viaduct over the Minneapolis and St. Louis railroad tracks.

10. Extend Pierce Avenue as shown in Figure 6 of this report.

11. Construct a connection between West 12th Street and East 13th Street at Federal Avenue to eliminate the off-set at this point.

12. Install approximately 100 additional meters in the downtown

district on the fringes of the existing metered area.

13. Change existing time limits at parking meters as shown in Figure 12.

14. Install meters in the alleys adjacent to Federal Avenue between North 3rd and South 2nd Streets.

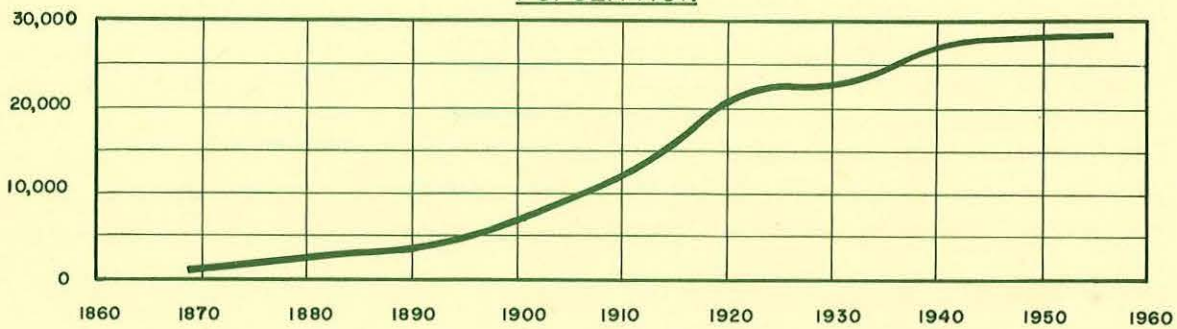
15. Acquire a site for a parking lot at the northwest corner of Federal Avenue and South 4th Street. This parking lot should be of a size to provide approximately 100 parking spaces.

16. Acquire two or three sites within one-half block of Federal Avenue between North 3rd and South 2nd Street, with a total of approximately 50 parking spaces.

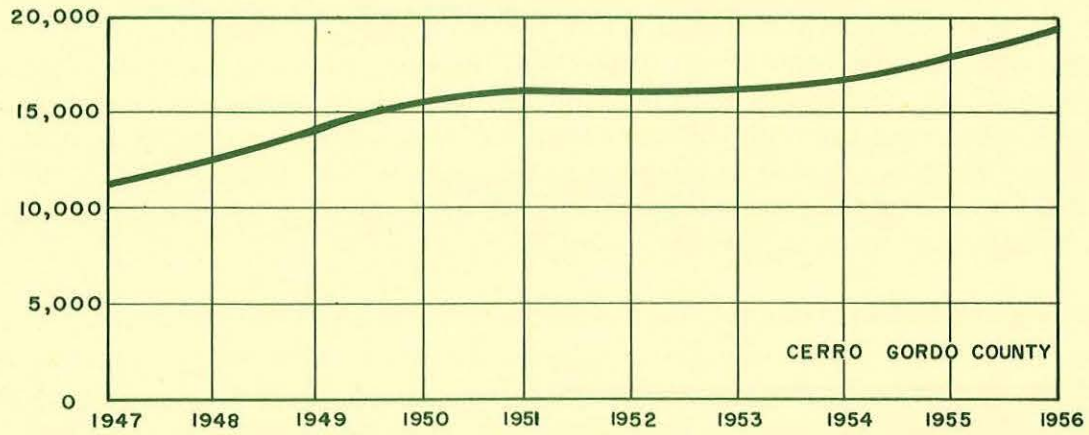
INTRODUCTION

TRENDS AFFECTING TRAFFIC AND PARKING

POPULATION



AUTOMOBILE REGISTRATION



RETAIL SALES

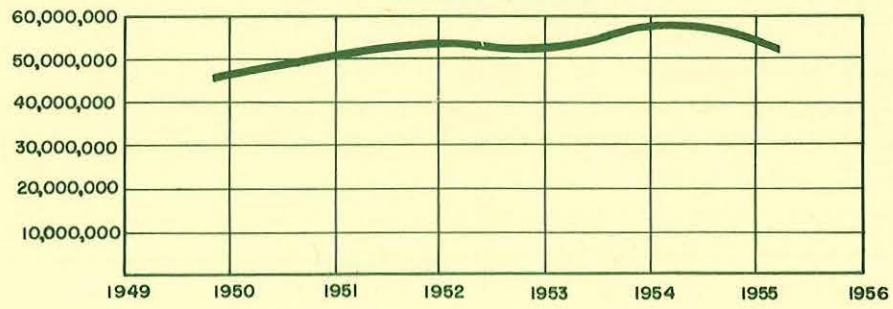


FIGURE 1

INTRODUCTION

Mason City is a retail and wholesale trade center for a prosperous farm area in north-central Iowa. Its trade area extends approximately 50 miles in all directions from the city. While it is ranked eleventh in population among Iowa cities, it has over the last few years ranked seventh in retail sales. The city also has important industry; the principal ones being the manufacture of cement, brick and tile, meat packing and the processing of farm products. A vigorous effort is carried on to obtain additional industry for the city.

Motor vehicle transportation is important both to commercial and industrial activity in Mason City. The private automobile serves as the principal means of transportation for patrons of commercial establishments and for workers both in commercial and industrial activities. The motor truck is much used for the hauling of raw materials and the delivery of finished goods. The motor vehicle has become an important means of transportation principally because of its convenience in moving persons and goods. This convenience may be enhanced through the development of an efficient street transportation system. Such a system is important not only to the user of the motor vehicle, but also to all residents of a community, as a good street transportation system minimizes the use of local residential streets.

The existing street transportation system in Mason City has serious deficiencies. Some are due to the geography of the area, and others have occurred because of the lack of planning in the early years of the city's development. The location of waterways, railroads and industries have delayed thus far the development of a street system adequate to meet today's needs.

The provision of parking facilities in connection with major traffic generators is part of an over-all street transportation system. In Mason City the principal concern in this regard is the downtown area. The city has in past years developed a number of municipal parking facilities and for this reason parking in the downtown area is not nearly so serious a problem as traffic movement.

The planning of a street transportation plan should provide, not only for today's needs but for those of the foreseeable future. An examination of factors influencing the growth of street traffic in Mason City indicates that traffic volumes will grow at a rate of 3.5 percent over the next 10 or 15 years. Trends affecting the growth of motor vehicle transportation may be seen in Figure 1.

In view of the serious nature of the traffic problem in Mason City solutions are neither easy nor inexpensive. However, if the city is to maintain its sound growth and remain a pleasant community in which to live it is imperative that an efficient street transportation system be developed. In the following pages street traffic and parking problems are discussed and recommendations are made for their treatment.

STREET TRAFFIC MOVEMENT

VEHICULAR FLOW

TOTAL TRAFFIC
AVERAGE WEEKDAY
4:30 - 5:30 P.M.
MAY, 1956

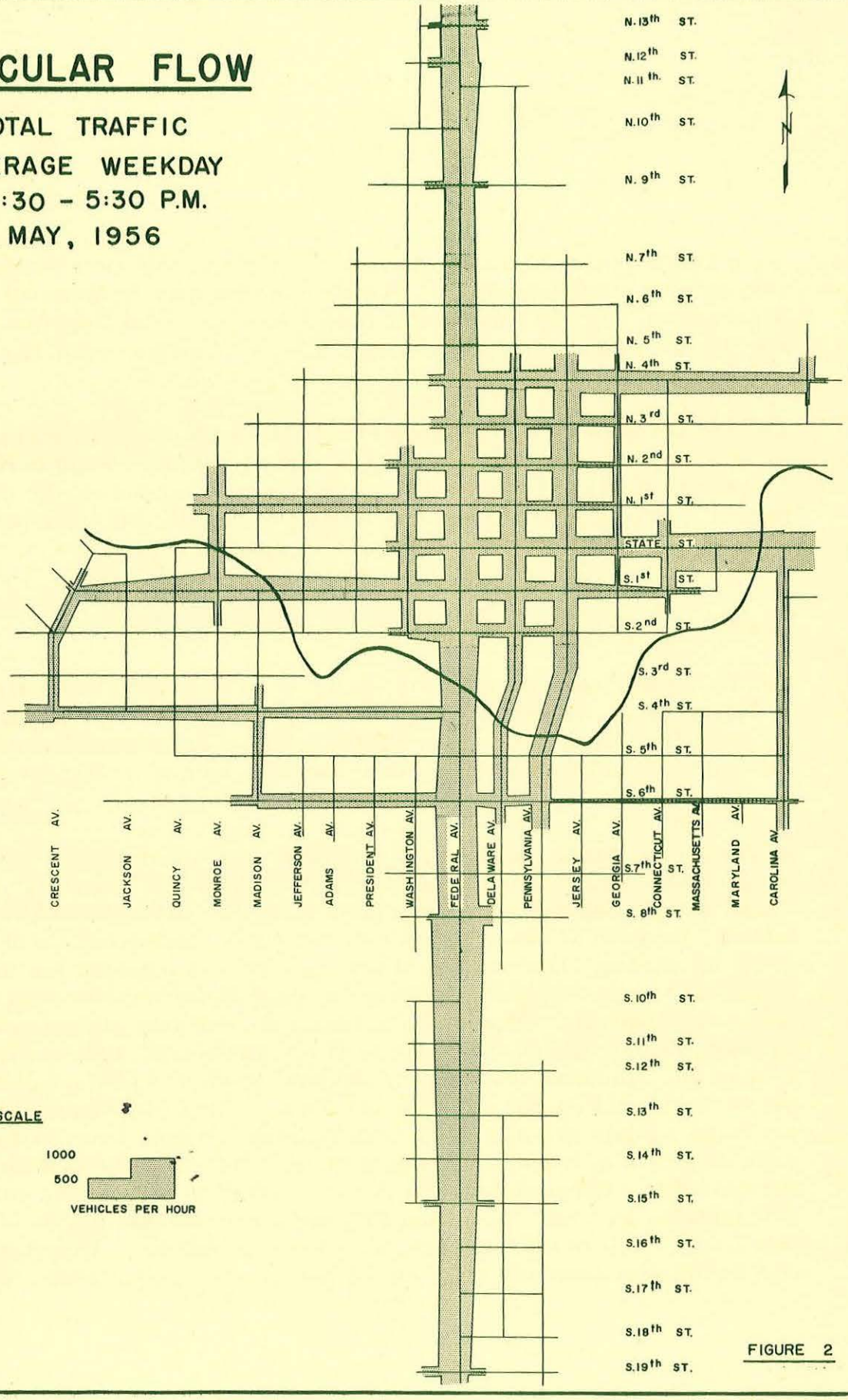


FIGURE 2

STREET TRAFFIC MOVEMENT

A serious problem of traffic movement exists at this time in Mason City, particularly at rush periods. Evidence of this may be obtained by simple observation. At any time during peak hours of traffic long lines of vehicles may be seen moving slowly or not at all, in the downtown area. The speed of movement often is comparable to a brisk walk.

More exact information is needed than can be obtainted by mere observation to determine the exact nature of the traffic problem. Vehicle flow must be measured; the length and causes of delays must be known; the desired pattern of traffic movement must be analyzed. All of this information must be studied in relation to the existing street system.

Traffic Volumes on the City's Streets

Traffic counts were made in the spring of 1956 on the principal traffic routes in Mason City. These counts were made during the morning and the evening peak traffic hours. Maximum traffic volumes in Mason City occur during the evening rush hour and the results of the evening traffic counts are shown in Figures 2 and 3.

A street or highway can carry a certain maximum amount of traffic without congestion. This amount of traffic is defined as the "capacity" of the roadway. This capacity depends upon such factors as the pavement width, parking regulations, location of bus stops and the timing of traffic signals at intersections along the street. Information of this natu re was obtained for the principal routes in Mason City and comparisons were made between peak hour volumes and street capacity. These comparisons showed that in many cases volumes in peak periods exceed the capacity of the streets to carry traffic without congestion. In some instances in the downtown area this congestion is severe, particularly on Federal and on South First Street. In Mason City most of the principal streets are of a width which allows a single lane for movement in each direction of travel. As a general rule the capacity of these streets to carry traffic without congestion is exceeded when the twoway volumes exceed 600 vehicles an hour. In Mason City eight and one-half miles of street exceed this limit. Half of this mileage is on Federal Avenue. Other streets where this condition exists are State Street east of the central area, South Fourth

VEHICULAR FLOW

DOWNTOWN TRAFFIC
AVERAGE WEEKDAY
4:30 – 5:30 P.M.
MAY, 1956

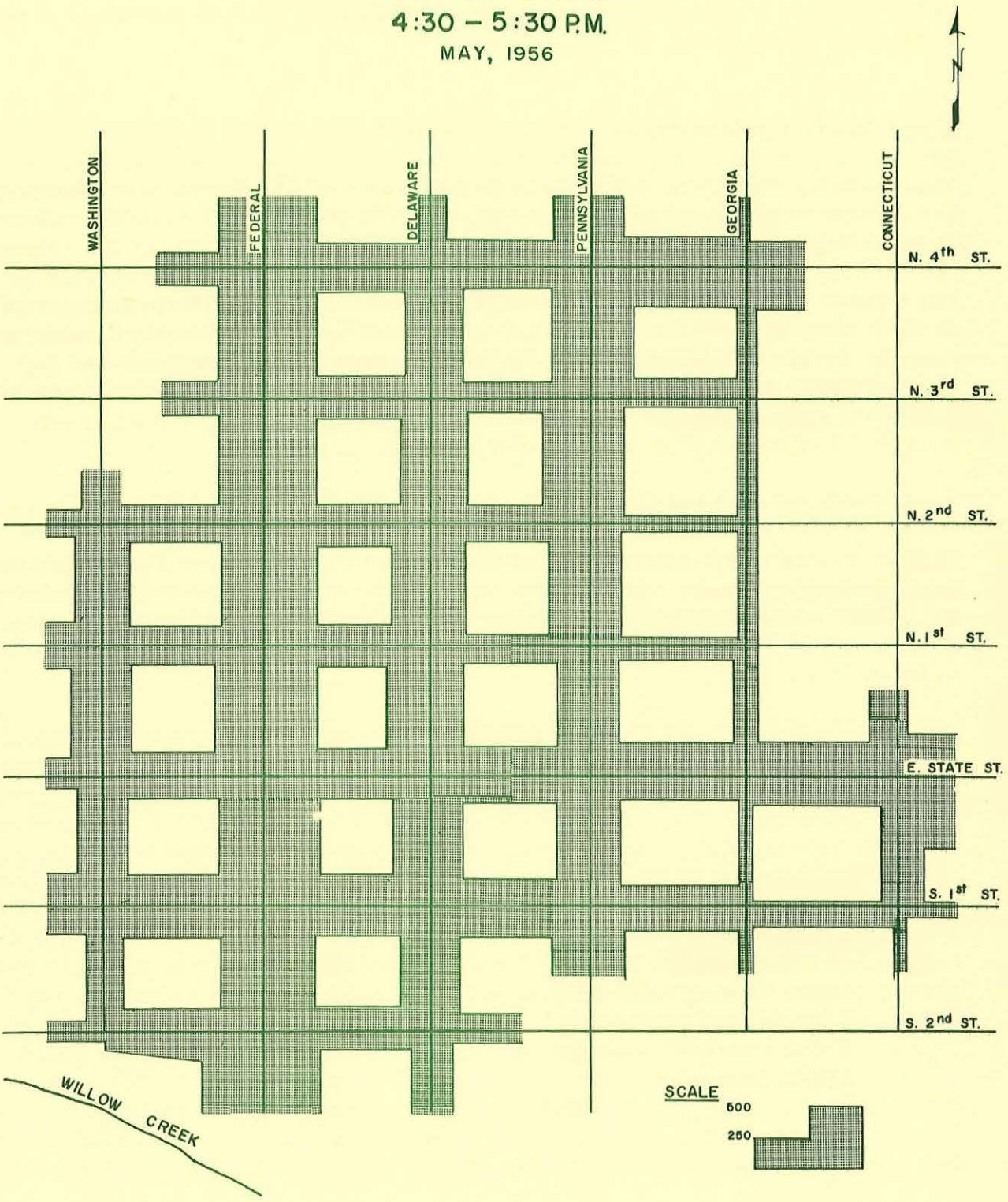


FIGURE 3

Street on the west edge of the city, Pennsylvania, Delaware and South First in the downtown area, and North Fourth Street and Carolina northeast of the central business district.

Speed and Delay Studies

In previous paragraphs it was seen that on much of the Mason City street system traffic volumes exceed the ability of the streets to carry traffic without congestion under existing conditions. To determine the extent of the delays upon traffic and the exact causes for these delays, speed and delay studies were made on the major traffic routes in Mason City. On the primary street system outside the downtown area average speeds vary between 14 miles an hour in the peak traffic hour and 18 miles an hour in the middle of the day. In the central district average speeds were considerably lower varying between four miles an hour when volumes were greatest in the evening rush hour to 13 miles an hour in non-rush periods.

A summary of the causes of traffic delays in the downtown area is given in Table 1. The most important of these causes is identified simply as 'congestion'. This term identifies a condition where delays were due simply to the fact that the number of vehicles attempting to use the streets exceeded the ability of the street to carry these vehicles under prevailing conditions.

TABLE I

CAUSES OF TRAFFIC DELAY IN THE DOWNTOWN AREA

Cause of Delay	Percent of Interference From Cause
Congestion	23
Traffic Signals	17
Right turning vehicles	21
Left turning vehicles	20
Double parked vehicles	10
Other causes	9
Total	100

PRINCIPAL TRAFFIC ROUTES IN MASON CITY

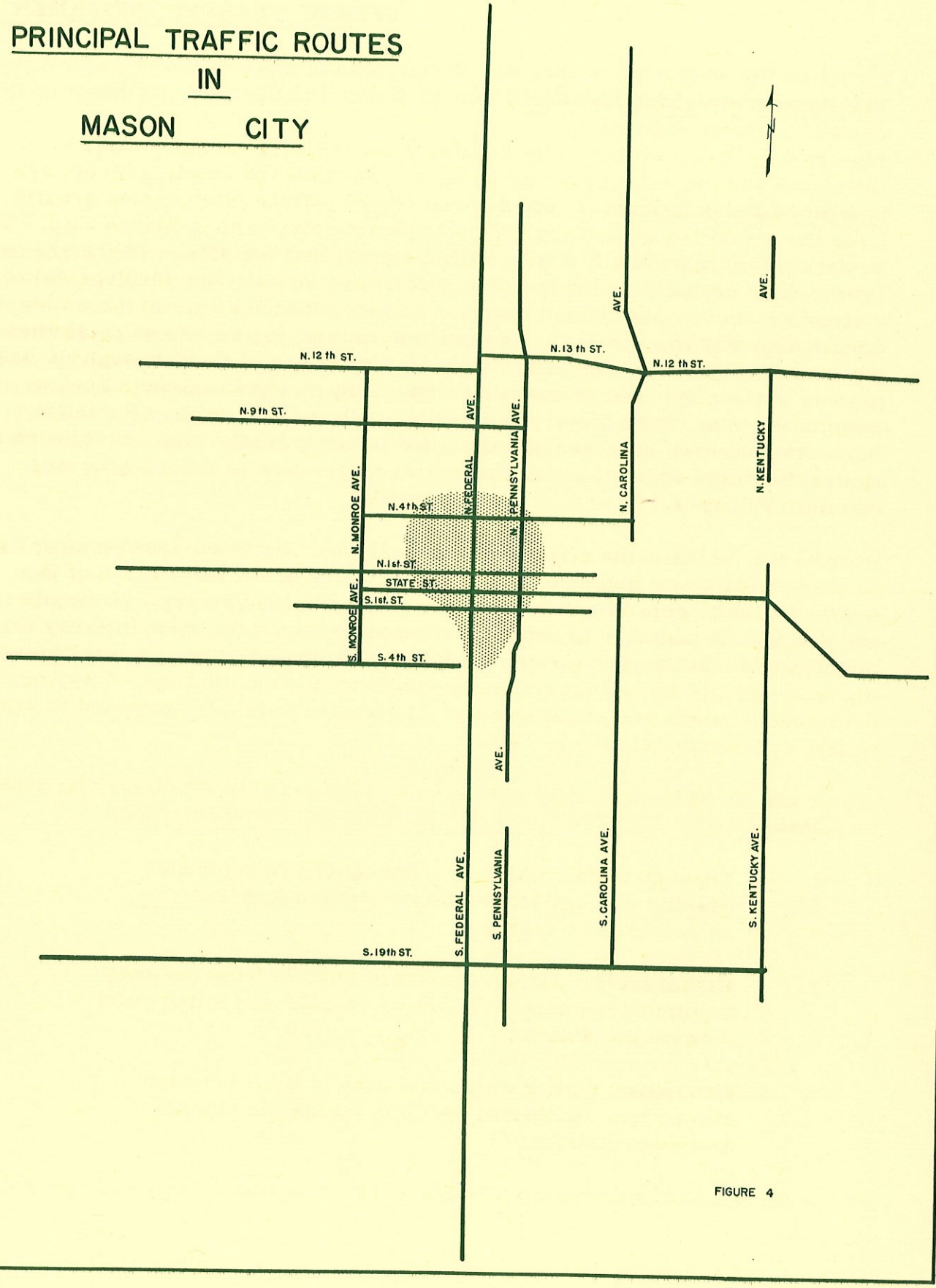


FIGURE 4

STREET TRAFFIC MOVEMENT

The Pattern of Vehicle Traffic

The travel pattern within a city depends upon the desired movements of motorists and the existing street system. Because the existing street system may have deficiencies, the desired travel pattern often varies greatly from the actual travel pattern. This is particularly true in Mason City. The street system is basically a grid with many dis-continuities. There are obstacles both nautural and man-made which have blocked the development of a simple street system which connects all parts of the city. In the entire community only two streets - Federal Avenue running north and south through the center of the town, and South 19th running east and west through the south portion of the city - are continuous. The most important streets such as Federal Avenue, State Street, North and South First Streets, all radiate from the downtown area and are designed to carry traffic into and through the central business districts. The principal routes now serving traffic are shown in Figure 4.

Despite the fact that the street system in Mason City is designed primarily to carry traffic into and through the central core of the city, much of the traffic would be served better by a different system of streets. Data upon which this conclusion is based were obtained by the Iowa State Highway Commission and published in a report published in May of 1949. In this report the daily vehicle movements from one point to another in Mason City and the surrounding areas are summarized. These data have been adjusted to represent conditions existing in 1956.

There are three basic traffic movements in Mason City which may be defined as follows.

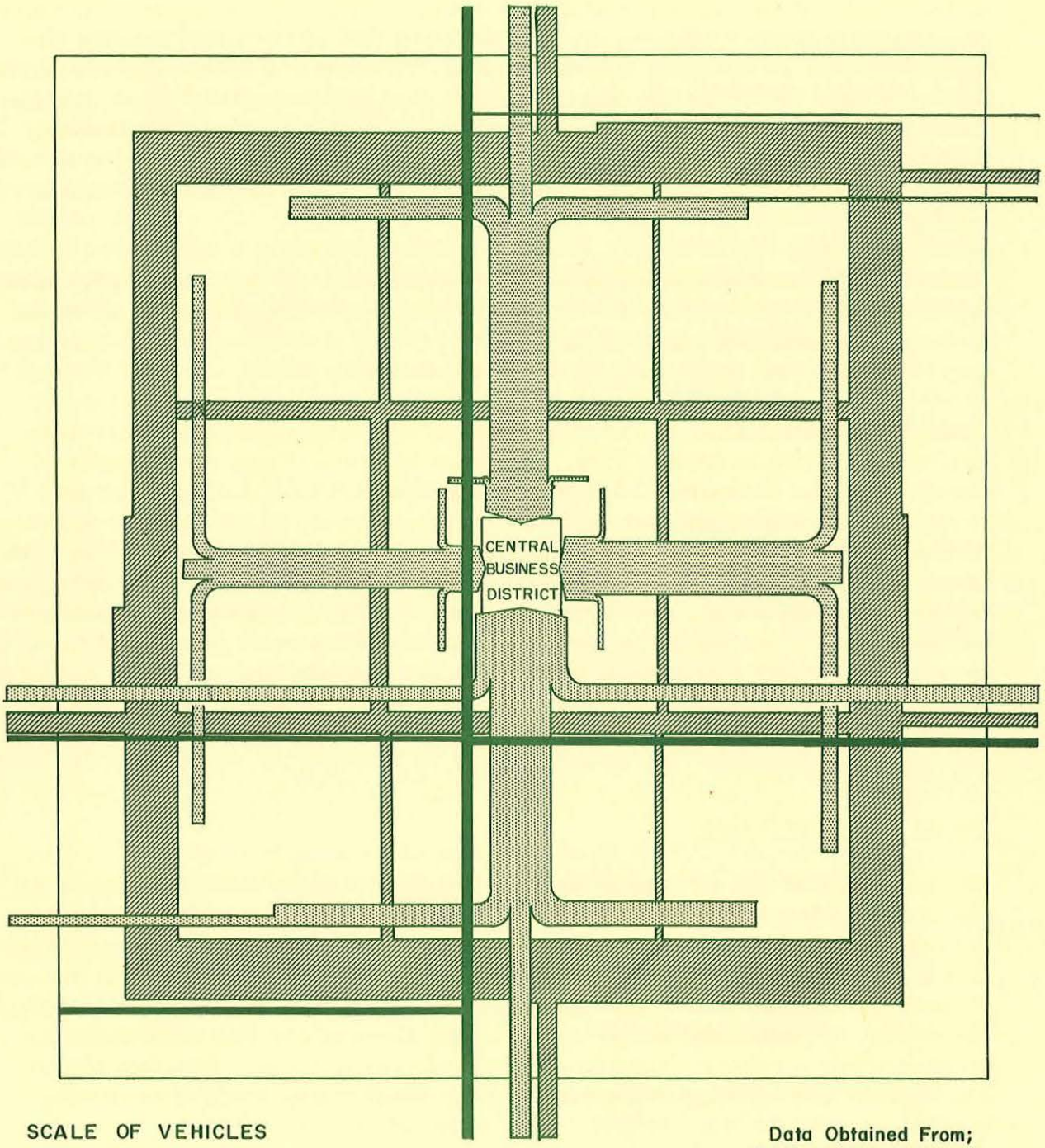
1. Through traffic which is made up of vehicle trips passing through Mason City without a stop except as required by traffic.

2. Radial traffic which consists of vehicle trips between a point in the central business district and some point outside the district.

3. Crosstown traffic which are vehicle trips between two points, neither of which is inside the central business district.

Of the three basic movements through traffic amounts to only two percent

DESIRED PATTERN OF TRAVEL BY MOTOR VEHICLES



SCALE OF VEHICLES

10,000
8,000
6,000
4,000
2,000

THROUGH TRAFFIC

CROSSTOWN TRAFFIC

RADIAL TRAFFIC

Data Obtained From;
IOWA STATE HIGHWAY
COMMISSION

FIGURE 5

of the total. If this is translated into actual traffic volumes on South Federal Avenue for example, a principal highway and one of the most heavily congested streets in the city, this through traffic amounts to 90 vehicles in the peak traffic hour or 10 percent of the total traffic on South Federal Avenue. Obviously if through traffic amounts to 10 percent of the total on through highways such as Federal Avenue and only two percent of the total traffic in the city, the volume on streets which are not through highways is almost negligible.

Radial traffic amounts to 45 percent or almost half of the total traffic movement in Mason City. This is the traffic best served by the existing street system. Most of the continuous principal traffic routes in Mason City lead into or go through the center of the downtown district.

Crosstown traffic amounts to 53 percent of the total or a little more than half of all traffic in Mason City. Very few streets of any length exist to carry this type of traffic. Actually, although this traffic is defined as 'crosstown traffic', the only available route carries it into and through the downtown district. This is a basic cause of congestion in Mason City. Most of the traffic is confined to a limited number of routes which lead to the center of the downtown district while over half of this traffic has no desire or reason to be in the central area. If suitable routes were developed for crosstown traffic, traffic problems now existing in Mason City would be greatly reduced. The desired travel pattern of traffic in Mason City is illustrated in Figure 5.

Single Lane Operation

The majority of the streets in Mason City have a right-of-way width of 66 feet and in a few cases 80 feet. On the principal streets pavement widths generally are 40 to 42 feet and occasionally 30 feet. Parking is permitted on all the principal routes. Almost without exception movement on the city's streets is confined to a single lane in each direction. Under these conditions movement is restricted to the speed of the slowest car and is completely stopped when a vehicle stops in the moving traffic lanes. Straight ahead movements and turning movements are in most cases made from a single traffic lane.

Traffic Controls on the City's Street System

Traffic controls have been installed in Mason City with considerable judgment and restraint. As a result traffic signals are located where the demand of traffic warrants. In the downtown area the traffic signals are coordinated as well as the equipment and twoway street traffic will permit. On Washington Street the traffic signal controllers are of an obsolete type which limits their effectiveness. The use of stop signs has been confined generally to through streets and isolated hazardous intersections. A review of the existing traffic signal and stop sign locations shows that there is no abuse of these types of controls in Mason City.

Summary and Conclusions

Vehicular traffic encounters congestion and delay particularly in peak periods on many of Mason City's streets. Traffic volumes in the downtown area, particularly on Federal Avenue, exceed the ability of the streets to carry traffic efficiently. Traffic is often slowed to the pace of a horse and buggy. There are two principal reasons for this condition.

1. The street system in Mason City is designed almost exclusively to carry traffic into and out of the central business district, although over half of the traffic in the city has neither origin nor destination in the downtown area and would be better served by streets which do not pass through the heart of the city.

2. Pavement widths on the primary street system throughout the city are 42 feet or less in width. Parking is generally permitted on these streets. There is no continuous length of pavement anywhere in Mason City where traffic in a single direction can move in more than one lane.

Existing traffic conditions already serious may become critical in the next five to ten years with the anticipated expansion of population and the use of the private automobile. If this condition is to be avoided it is necessary that remedial action be taken in the near future.

THE RECOMMENDED STREET DEVELOPMENT PROGRAM

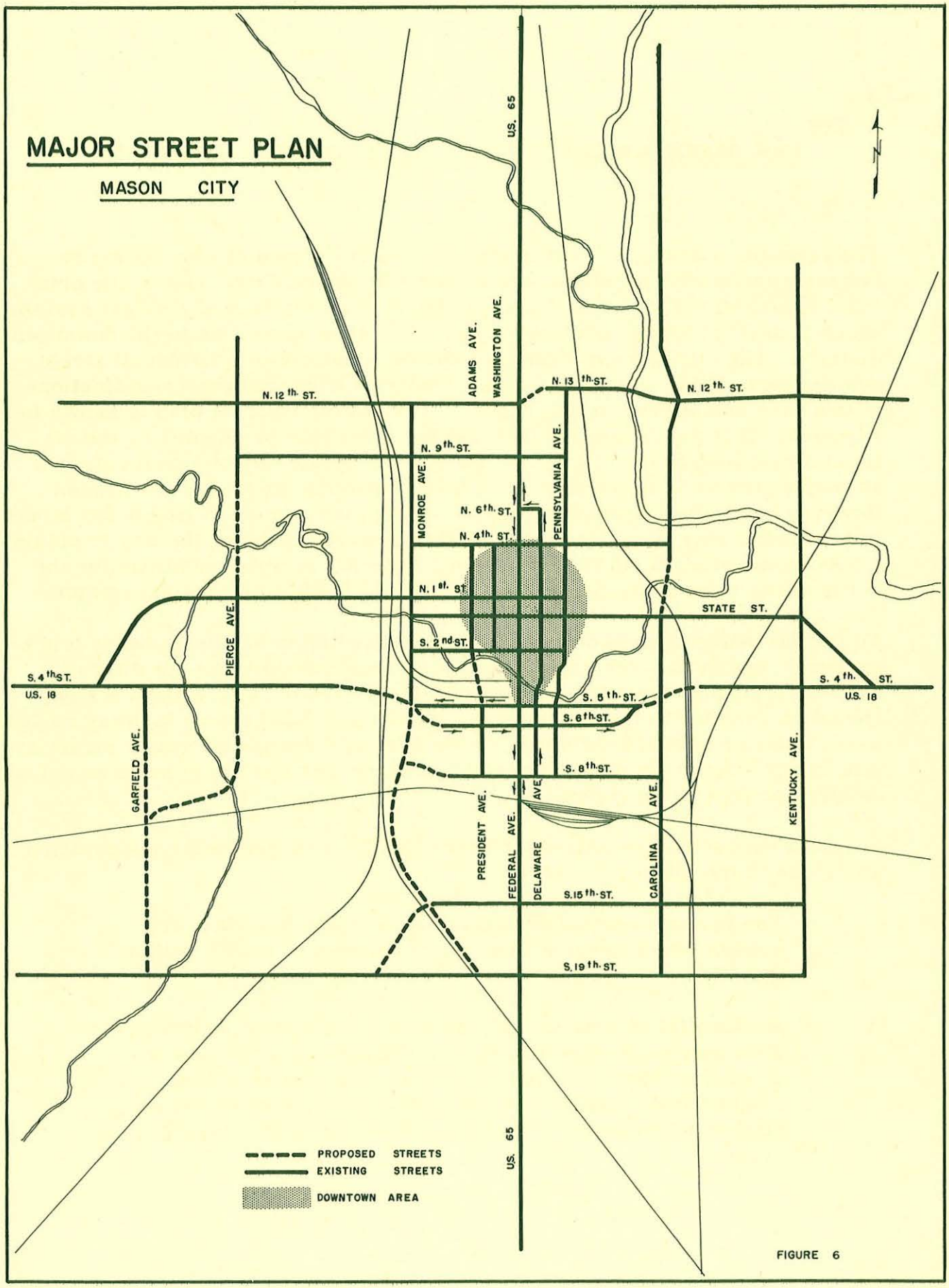

MAJOR STREET PLAN
MASON CITY
N
U.S. 65
ADAMS AVE.
WASHINGTON AVE.
N. 12 th. ST.
N. 13 th. ST.
N. 12 th. ST.
N. 9 th. ST.
MONROE AVE.
PENNSYLVANIA AVE.
N. 6 th. ST.
N. 4 th. ST.
N. 1 st. ST.
STATE ST.
PIERCE AVE.
S. 2 nd. ST.
S. 4 th. ST.
U.S. 18
S. 5 th. ST.
S. 6 th. ST.
S. 8 th. ST.
S. 4 th. ST.
U.S. 18
GARFIELD AVE.
KENTUCKY AVE.
PRESIDENT AVE.
FEDERAL AVE.
DELAWARE AVE.
CAROLINA AVE.
S. 15 th. ST.
S. 19 th. ST.
U.S. 65
PROPOSED STREETS
EXISTING STREETS
DOWNTOWN AREA

FIGURE 6

THE RECOMMENDED STREET DEVELOPMENT PROGRAM

The recommendations offered in this section are aimed at eliminating or relieving the traffic problems now existing in Mason City. One of the principal causes of traffic difficulties was found to be the lack of a street system which connected all parts of the city to each other as well as to the downtown district. The city has had a plan for the development of an over-all street system since 1941. Because traffic conditions have changed, modifications to this plan are offered in this report. The modified street plan is shown in Figure 6. It is recommended that this amended plan be adopted as the official street plan of the city. The designation by the city of certain streets as major streets is in itself of little help in solving the traffic problems. However, with the adoption of a major street plan monies available for street improvement may be concentrated on this system, enabling the city to obtain a maximum return from its investment. Specific recommendations for the relief of the most acute conditions are offered in the following paragraphs.

To permit better control of trucking operations and to eliminate heavy trucking from residential streets, the following recommendations are offered. Through trucking, that is truck trips made through the city without a stop, should be confined to the officially designated state and county highway routes. Local trucking should be confined to the officially designated major street system except when it becomes necessary to leave this system to make an actual delivery or pick-up of goods.

In preparing recommendations for street traffic improvement consideration was given to the following objectives.

1. The major streets should form an integrated system of streets which serve all the major desires of traffic within the city.

2. Residential streets should be freed from through traffic. This may be done by controlling the pattern of streets so as to limit their usefulness to providing access to the neighborhood itself. In built up areas this may be accomplished by means of physical barriers or traffic regulations.

3. Wherever possible improvements are to be made in the existing right-of-way to avoid the cost and delay of right-of-way acquisition.

4. Roadways must have sufficient capacity to permit the concentration of traffic on a limited number of streets where it can move freely, be effectively controlled and well supervised by police.

Several methods are available for increasing the capacity of the streets. Among these are the prohibition of parking, the use of a pair of adjacent streets for oneway movement, and pavement widening. All of these have been used in preparing the plan for Mason City. Parking prohibitions are recommended where the demands of moving traffic require, and the demands for curb parking are not imperative. Oneway street systems may be used efficiently particularly in downtown areas where street widening is extremely costly and the demand for curb parking is high. The widening of streets has been recommended in those cases where sufficient capacity cannot be obtained even if parking is prohibited or where additional capacity is needed and it is desirable to retain curb parking.

Particular mention should be made of the value of oneway streets in achieving an efficient street transportation system. A considerable gain in capacity can be obtained through the simple conversion of streets to oneway movement. This is particularly true if one of the two streets being considered carries more traffic than the other and the traffic load can be more equally divided between the two streets. This gain in capacity is often sufficient to retain curb parking which is extremely valuable in a downtown terminal area. Oneway streets permit more efficient signal timing, and a well-designed system usually results in a reduction of the number of accidents. Left turns may be made without conflict from on-coming traffic, and where the conversion to oneway operation results in an increase in the number of lanes for a single direction of movement, turning movements may be separated from straight through movements.

SPECIFIC RECOMMENDATIONS

1. Convert Federal Avenue to a southbound oneway street between North 6th and South 8th Streets and Delaware Avenue to a oneway street northbound between the same points. To permit this oneway system to operate with maximum efficiency, the following improvements are recommended.

   a. Corner rounding

      Increase the radius to 20 feet or more at the following locations:

      Northeast corner of North 6th and Federal
      Southwest corner of North 6th and Delaware
      Northwest corner of South 8th and Delaware
      Southeast corner of South 8th and Federal

   b. Traffic signals to be installed

      Delaware and North 4th Street
      Delaware and North 1st Street
      Delaware and South 2nd Street
      Delaware and South 5th Street
      Delaware and South 6th Street
      Federal and South 5th Street

      The signals at Delaware and North 4th and at Delaware and North 2nd should be installed before the conversion of Federal and Delaware to oneway movement.

   c. Signs and markings

      Oneway signs and route markings must be installed on the proposed oneway system. Pavements should be laned to facilitate traffic movement.

INTERSECTION OF FEDERAL AVE. AND SO. EIGHTH ST.

PROPOSED DESIGN

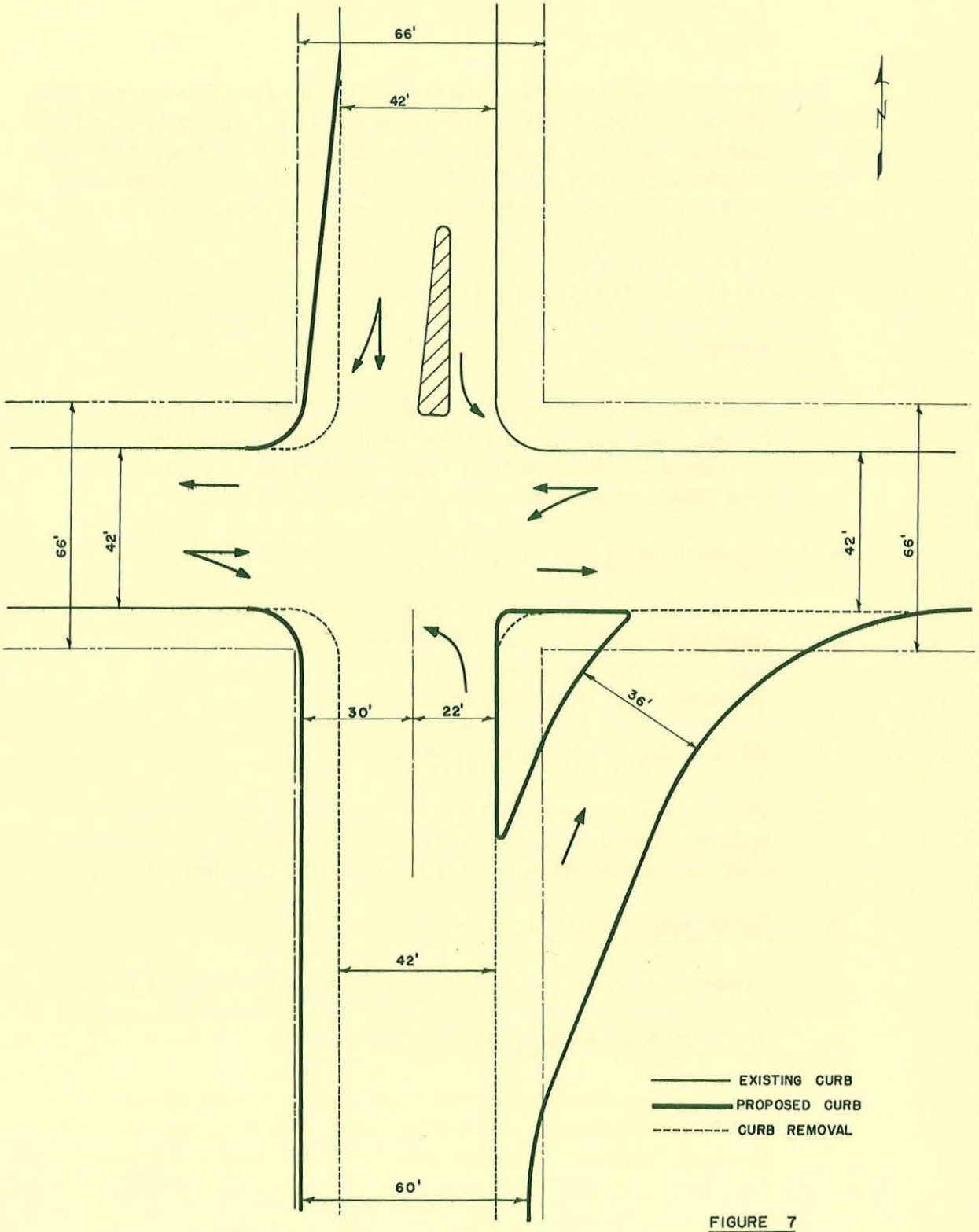


FIGURE 7

d. Redesign the south approach at Federal and South 8th Street

To provide maximum efficiency at the south terminal of the proposed oneway system it is recommended that the intersection of Federal and South 8th be redesigned as shown in Figure 7. The installation of the oneway system need not be delayed for this improvement but it should be completed as soon as possible.

2. Federal Avenue Outside the Proposed Oneway System

a. North city limits to North 15th Street

Prohibit parking on both sides of the street at all times. Eventually it is desirable that property be acquired to increase the right-of-way to 80 feet, and that a pavement 60 feet wide be provided.

b. North 15th to North 13th Street

Widen the pavement to a minimum of 56 feet and desirably to 60 feet in these two blocks through the acquisition of 9 to 14 feet of right-of-way on the west side of the street.

c. North 13th to North 6th Street

Prohibit parking on both sides of the street at all times. Eventual widening of the pavement to 60 feet on a right-of-way of 80 feet is recommended.

d. South 8th to South 10th Street

Prohibit parking on both sides of the street at all times.

e. South 10th to South 19th Street

Acquire the abandoned railroad right-of-way on the west side of the street, which when added to the present right-of-way will give a total width in excess

of 125 feet. This width will permit the construction of two three-lane divided roadways plus a service drive on the west side of the street between the viaduct and South 14th Street. From South 14th to South 19th adjacent to the old fair grounds now proposed as a shopping center, two three-lane roadways may be provided with a median strip 14 feet or more in width to provide left turn refuges.

f. South 19th to the south city limits

Prohibit parking on both sides of the street at all times. Eventual acquisition of sufficient property to provide a right-of-way 80 feet in width and a pavement 60 feet wide is also recommended.

3. Downtown Traffic Signals

It is recommended that the downtown traffic signal system which now consists of signals on Washington, Federal and Delaware including the signals on Federal between North 13th and South 8th, be interconnected with individual controllers at each signalized intersection.

4. The U. S. 18 By-pass

The Iowa State Highway Commission is relocating U. S. Route 18. Starting at the east city limits the route will continue west on 4th Street to a point near Carolina, where it will be routed as a oneway system over 5th and 6th Streets as far west as Monroe where it will continue to the west city limits as a twoway route over 5th Street. In the twoway portion of this route on 4th Street it is recommended that the pavement be 48 feet wide if parking is prohibited and 60 feet wide if parking is to be permitted. A pavement width of 60 feet will require the acquisition of additional right-of-way.

5. South Monroe Avenue

Monroe Avenue is to be extended to South 6th Street as part of the relocation of U. S. 18. It is recommended that Monroe be

extended southward from 6th to South 19th generally along the east side of the Chicago and Northwestern Railroad tracks. An initial pavement of 48 feet on a right-of-way of 80 feet is recommended. The opening of this route is desirable for a number of reasons. It will serve as a relief route on the west side of Federal Avenue. It will provide greater access to the industrial area southwest of the business district and will provide better access to the old fairground property now proposed as a shopping center.

6. Adams-President Route

It is recommended that a street be opened between Adams and South 2nd and President and South 5th. To accomplish this a bridge must be constructed over Willow Creek, and a street must be opened across the railroad tracks between Willow Creek and South 4th and between South 4th and South 5th. The railroad track crossing may be made at grade and although there are difficulties involved, it is believed that this connection will be a great advantage to the city. This route will relieve Federal Avenue in its most congested area north of South 8th Street. It will increase the access to the downtown area from the proposed U. S. 18 by-pass on 5th and 6th Streets.

7. Carolina Avenue

It is recommended that Carolina be opened between State Street and North 3rd Street. This opening will require the construction of a bridge viaduct over Willow Creek and the Minneapolis and St. Louis Railroad tracks. With this connection, Carolina can become one of the important crosstown routes in the city of Mason City. It should also be noted that this connection has been recommended by the consultants who prepared the city plan in 1941.

8. Pierce Avenue

Pierce Avenue now serves as a local street on the west side of Mason City. If extended with proper improvements it can become an important crosstown street through a rapidly developing residential area. A bridge across Willow Creek is

now in the planning stage and it is recommended that this bridge be constructed with a pavement width of no less than 42 feet. South of the Milwaukee tracks it would be difficult to extend Pierce directly south to South 19th Street. For this reason it is recommended that north of the Milwaukee tracks Pierce can be connected with Garfield extending southward as shown on the major street plan. The completed street should have a pavement 42 feet in width on a right-of-way 66 feet in width.

9. It is recommended that a connection be built between West 12th Street and East 13th Street at Federal Avenue so that these two streets may form one continuous east-west crosstown route on the north side of town.

PARKING IN THE CENTRAL BUSINESS DISTRICT

PARKING IN THE CENTRAL BUSINESS DISTRICT

Introduction

A study of parking in the downtown district of Mason City was made to provide answers to the following questions.

1. Do the existing parking regulations and their enforcement accomplish the desired purpose - that is, the most efficient use of existing parking space?

2. Is there sufficient parking space in the downtown district to meet the needs both at the present time and those of the foreseeable future?

3. If additional parking space is required, how much is needed, where should it be located, and what program should be developed to provide it?

Data used in the study of parking was collected in the last spring of 1956. Studies were made of the quantity and type of existing parking space, of the occupancy of this space and of drivers' parking habits. Investigations were made to determine where additional parking space could be located if needed.

Definition of the Downtown Parking Area

For the purposes of this study the downtown district is defined as the area generally bounded by North 5th Street, Connecticut Avenue, Willow Creek and Jefferson Avenue. Within this area there were 3,239 parking spaces at the time the survey was made in the spring of 1956. A breakdown of the space by type is given in Table II.

PARKING IN THE CENTRAL BUSINESS DISTRICT

TABLE II

SUMMARY OF PARKING SPACE IN DOWNTOWN MASON CITY

Total Curb Space		1,816
12 minute metered	11	
1 hour metered	521	
2 hour metered	135	
No time limit - free	1106	
Miscellaneous	43	
Total Offstreet Space		1,180
Customer Lots	173	
Municipal Lots	645	
Commercial - fee lots	24	
Private Lots	338	
Total Legal Alley Space		243
Total Parking Space		3,239

Miscellaneous curb space includes such items as the two minute spaces for the bank teller, five minute space at the Post Office and similar special regulations. Customer space is that space provided by a given store or building for the exclusive use of its patrons. Municipal parking space is in the city owned parking lots on the fringes of the central business district. There is no time limit and no charge is imposed for this parking. Private parking space is generally in small lots behind buildings. It usually is restricted as to its use, generally to persons who work in a given establishment.

Occupancy of Parking Space

The intensity of the use of parking space varies according to the season of the year, the time of day, and by type of parking space. The study of available data shows that parking demand was approximately equal to the average annual parking demand at the time the survey was made in the spring of 1956.

Daily occupancy of parking space varies as shown in Figure 8. The number of

vehicles parked increases in the early morning hours to a peak at 10:30 AM when 75 percent of all the space in the downtown area is occupied. During the noon hour occupancy drops off slightly and builds up again to a peak at 2:30 PM when 78 percent of the space is occupied. Average occupancy between 9:00 AM and 5:00 PM is 70 percent of the available space.

An analysis of the different types of parking space shows that the best use is made of the metered curb space and of the municipal lots, and the least use is made of space restricted to certain groups of parkers - that is customer and private offstreet lots. When parking is at its peak at 2:30 in the afternoon the different types of parking space are occupied as follows:

Type of Space	% of Space Occupied
1 hour metered curb	81 %
2 hour metered curb	91 %
No time limit curb	75 %
Municipal lots	87 %
Private lots	67 %
Customer lots	48 %

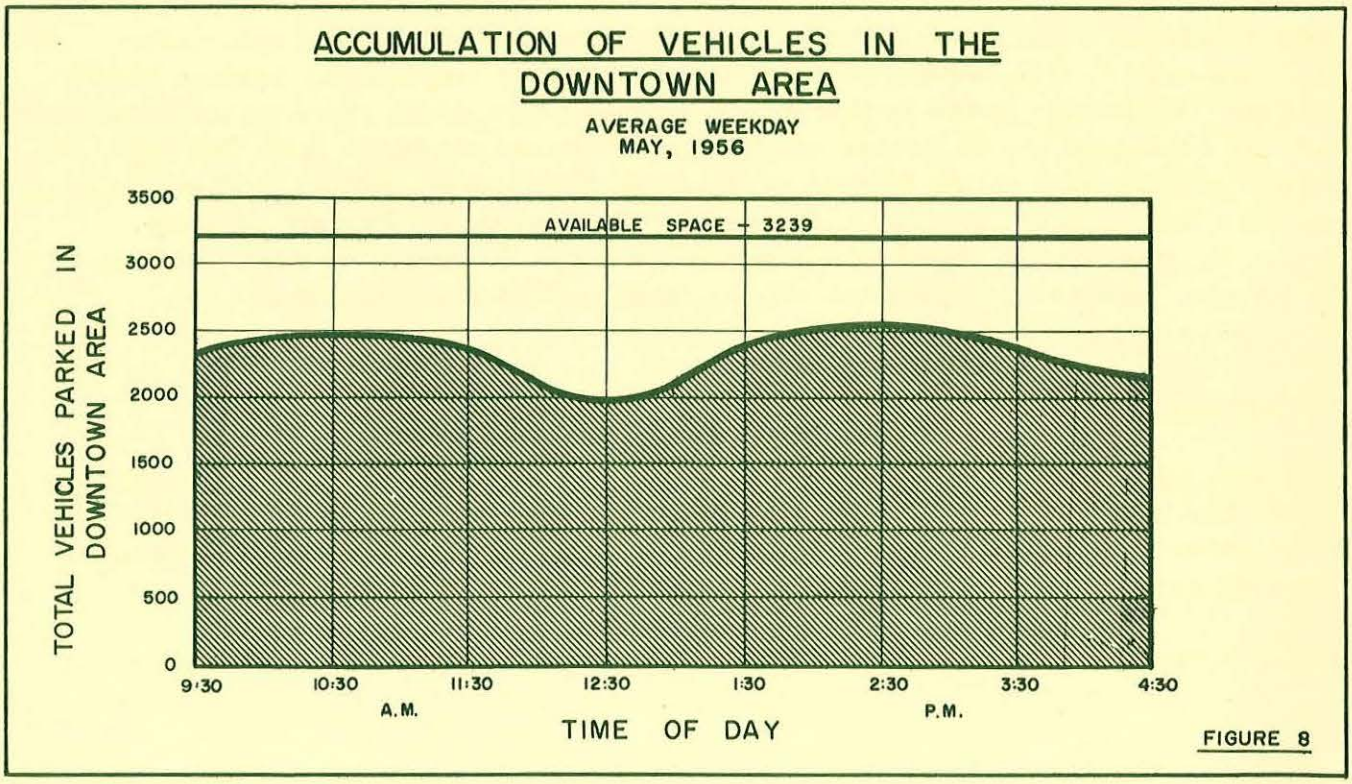


FIGURE 8

Habits of Parkers in the Downtown Area

The reasons given by persons for parking in the downtown area are given in Figure 9. At the peak parking time 57 percent of the vehicles parked are those of persons who earn their livelihood in the downtown area. Persons patronizing the downtown area comprise 39 percent of the parkers and the remaining 4 percent are persons parking because they have a residence in the immediate vicinity. Vehicles parked by shoppers comprise only 11 percent or one out of every nine vehicles which were parked at the peak parking time in the afternoon.

The length of time vehicles were parked is given in Figure 10. Patrons of the downtown area parked for relatively short periods of time and persons employed for relatively long periods of time. For example, two-thirds of those persons who were downtown shopping parked less than two hours and only two percent over six hours. On the other hand, only eight percent of the vehicles parked by persons working in the downtown area were parked two hours or less and two-thirds of these vehicles were parked more than six hours.

The type of parking space chosen in the downtown area is influenced by the

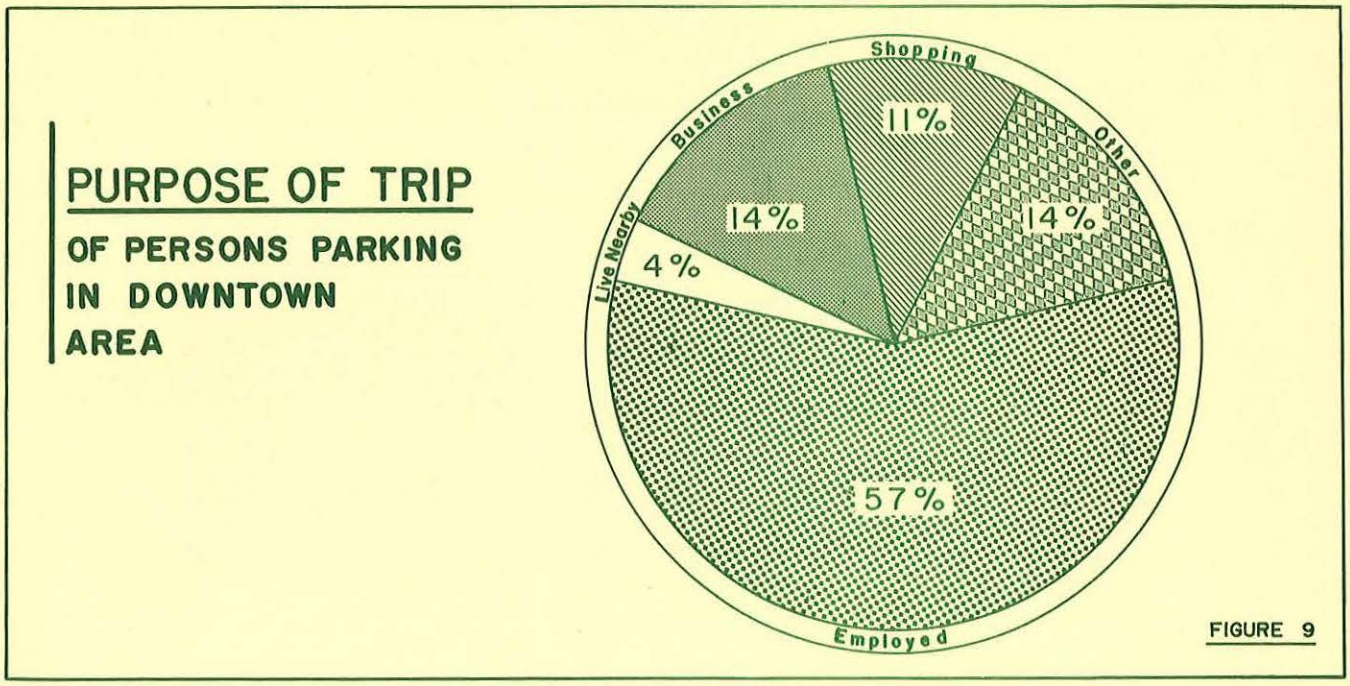


FIGURE 9

LENGTH OF TIME PARKED

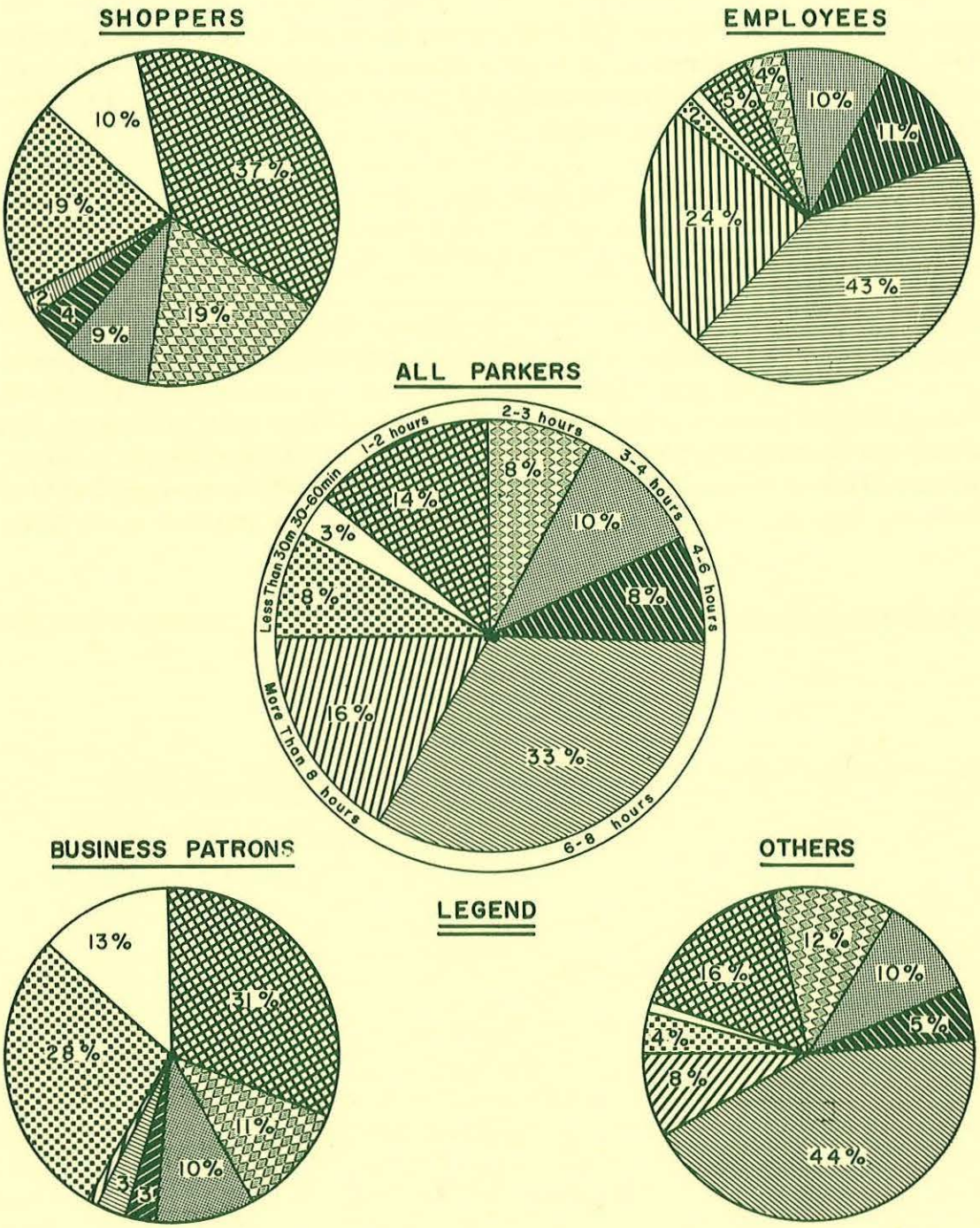


FIGURE 10

regulations imposed on the space. Patrons, the majority of whom are short time parkers desiring convenient space, are the greatest users of the one and two hour metered curb space. Persons employed in the downtown area seek free parking space where they can remain for a long period of time. The tables below give a breakdown as to the use of the different types of parking space in the downtown area.

TABLE III

USE MADE OF THE VARIOUS TYPES OF PARKING SPACE

Type of Space	Used By		
	Patrons	Employees	Students
Metered Curb	76 %	24 %	---
No time limit curbs	24 %	65 %	11 %
Municipal lots	23 %	77 %	---
All other lots	25 %	68 %	8 %

Type of Space Used by Patrons of the Downtown Area

Metered space	44 %
Free space	56 %

Type of Space Used by Persons Employed in the Downtown Area

Metered space	8 %
Free space	92 %

Enforcement of Parking Regulations

The use made of various types of parking space is influenced by the degree of enforcement carried on by the Police Department. A check of the one hour metered space showed that half of the parkers parked one hour or less and the other half over-stayed the time limit. In most cases where parkers over-stayed the time limit they inserted additional coins in the meter to avoid having the red flag show. A breakdown of the length of time persons stayed in the one hour metered area is given in Table IV.

PEAK PARKING DEMAND
COMPARED WITH
EXISTING FACILITIES
MAY, 1956
AVERAGE WEEKDAY
4:30 – 5:30 P.M.

FIGURE 11

TABLE IV

LENGTH OF TIME PERSONS PARKED IN THE ONE HOUR METERED ZONE

Type of Parker	Length of Time Parked			
	60 minutes or less	60-90 minutes	90-120 minutes	2 hours or more
Patrons	59 %	13 %	13 %	15 %
Employees	18 %	14 %	14 %	54 %
All Parkers	50 %	13.5 %	13.5 %	23 %

Demand for Parking Space

The study of parking in downtown Mason City shows that even at the time of peak parking demand at 2:30 in the afternoon, 22 percent, or over 700 parking spaces, were unused. At first glance this would indicate that there was no demand for additional space. This would be the case if the demand for parking space were distributed over the area in the same proportion as the supply of parking space. Obviously this is not the case. Destinations of parkers are most heavily concentrated in a small area along both sides of Federal Avenue whereas the supply of parking space is distributed more generally over the area with the greatest amounts of parking space being on the fringes. In addition, some space vacancies are in restricted customer and private lots and are not available for general use.

In view of the foregoing it can be understood that despite the fact that some parking space is vacant even in peak periods, there may be a demand for additional parking space in some areas of the downtown district. This occurs in downtown Mason City. There are several blocks, as shown in Figure 11, in which existing demand for parking space exceeds the supply. This means that some of the parkers who have a destination in these blocks are not able to find at all times a parking space in this block. However, it is generally true that in periods of normal parking demand nobody need walk more than two blocks from their parking place to their destination, and in most cases it is possible to find a parking space within one block of a person's destination

PARKING IN THE CENTRAL BUSINESS DISTRICT

Summary and Conclusions

At the present time there are 3,239 parking spaces in downtown Mason City. On a normal weekday peak occupancy of this space varies between 75 and 80 percent of the total available space. In the peak period vacancies exist in all types of space but the short time convenient parking such as the one and two hour metered curb, are better used than other types of parking space. Patrons of the downtown area who are in general short time users of parking space, are the principal users of the one and two hour metered curb space. Persons employed in the downtown district generally park for longer periods of time than patrons and are concentrated in the "no time limit" curb space and in the free municipal lots. There is no critical shortage of parking space anywhere in the downtown area at this time. At times there are localized shortages of convenient space for patrons close to their destinations.

THE RECOMMENDED PARKING PROGRAM

RECOMMENDED PARKING PROGRAM

DOWNTOWN MASON CITY

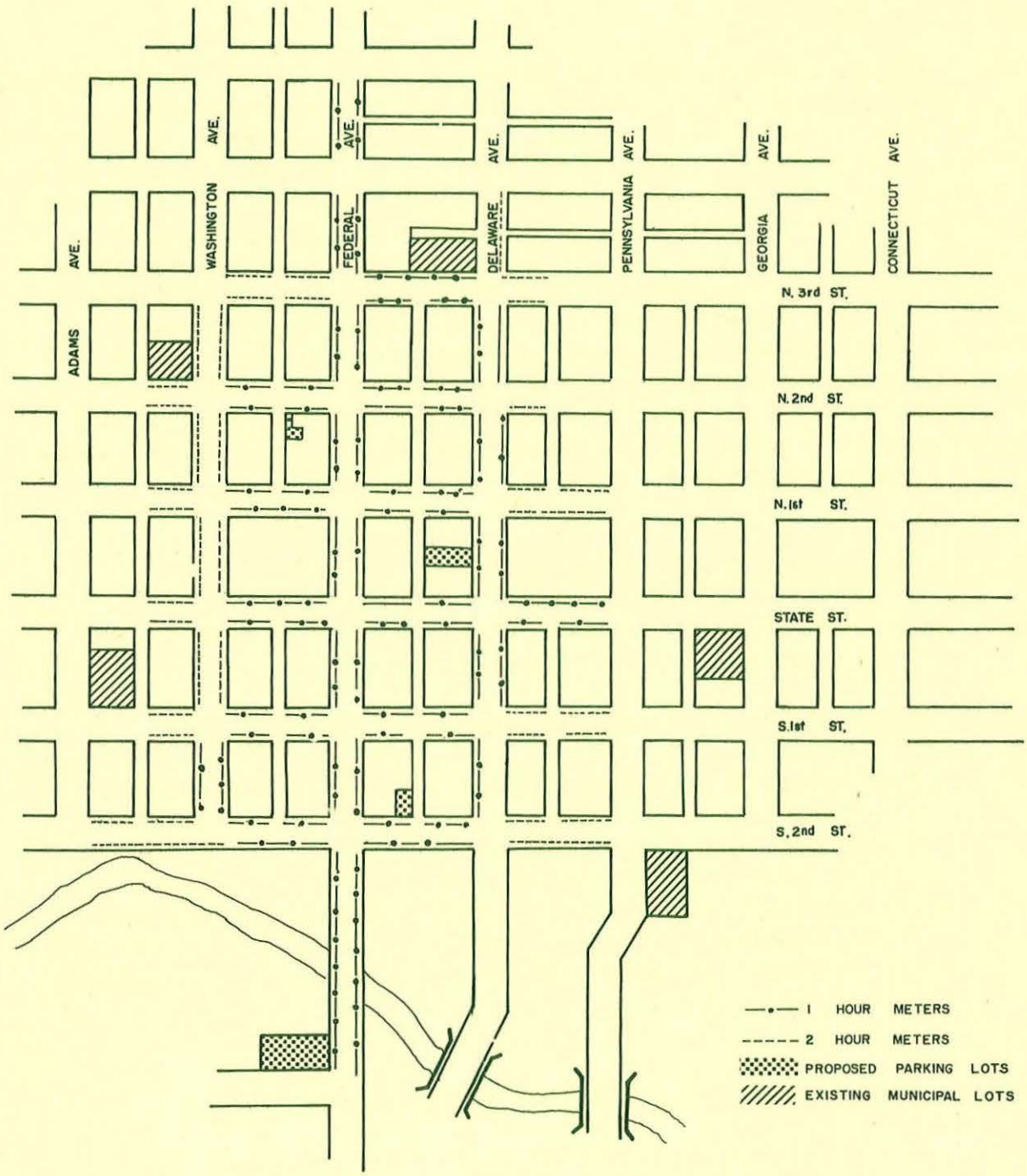


FIGURE 12

THE RECOMMENDED PARKING PROGRAM

The study of parking in downtown Mason City has disclosed that at this time no critical parking problem exists. Over the area generally there is sufficient space to meet today's needs. Occasionally during the day, particularly when parking demand is at its peak, there are localized shortages of convenient space. It is anticipated that the demand for parking space will continue to increase in the future. Mason City is a growing community and there will be a demand for additional parking space in the next five to ten years. It is advisable that the city take steps at this time to meet future anticipated parking shortages. Simply by keeping ahead of the parking problem the city gains a reputation for having convenient parking space. In addition, land may be acquired at this time at a reasonable cost. If the city waits until the need for additional parking becomes critical it may well be that the cost of developing parking space may increase considerably.

Specific Recommendations - Existing Parking Facilities

1. Install approximately 100 additional meters at this time on the fringes of the existing metered area.

2. Change existing time limits as shown in Figure 12.

3. Install meters in the alleys adjacent to Federal Avenue between North 3rd and South 2nd Street. These meters should have a two hour limit with a charge of five cents an hour. The alleys in downtown Mason City are approximately 30 feet in width and in many automobile parking is now legal. The installation of meters will help to define more clearly that space which may be used by private automobiles and help to reserve this space for patrons of the downtown area.

Specific Recommendations - Additional Offstreet Facilities

1. Acquire a site for a parking lot at the northwest corner of Federal Avenue and South 4th Street. The city is now considering a parking lot in this location on a parcel of land

with a frontage of 100 feet on Federal Avenue and 300 feet along South 4th Street. A parking lot of this size will provide approximately 100 parking spaces, and will serve both patrons and persons employed within the area. Twenty-five of the spaces closest to Federal Avenue should be metered to reserve them for patron use. The initial cost of obtaining this site and developing it for parking is estimated as follows.

Acquisition of site	$ 165,000.00
Improvements including grading, surfacing, drainage and lighting	18,000.00
25 parking meters	1,500.00
Total Initial Cost	$ 184,500.00

2. Acquire two or three sites in the locations shown in Figure 12 or similar areas within a distance of one-half to one block of Federal Avenue between North 3rd and South 2nd Streets. These new lots will provide approximately 50 parking spaces. The cost of obtaining these sites and developing them for parking are estimated as follows.

Acquisition of sites	$ 75,000.00
Improvements	10,000.00
Parking meters	3,000.00
Total Initial Cost	$ 87,000.00

Financing the Offstreet Parking Program

In the past the city has financed the acquisition of property for municipal offstreet parking sites through local borrowing on a short term basis. The city has obtained this money by paying interest at rates varying from 1 3/4 to 5 percent. Possibly the city can continue to finance its offstreet parking on this basis. However, the recommended program requires sums of money considerably greater than those obtained in the past. For this reason the city may wish to develop the recommended program through the issuance of parking revenue bonds. If this is done sufficient revenue bonds must be issued to pay the cost of the recommended program and to retire the amount of money outstanding on present parking lot contracts. As of Sept. 1, 1956

this amounted to $ 77,144.17. Ordinarily it takes about one year to develop a revenue bond financing program. Therefore it is estimated that by mid-summer of 1957, the earliest date revenue bonds could be sold, that the city will owe approximately $ 55,000.00 on its existing parking lot contracts. The following discussion is offered as a guide to the city if it proceeds with revenue bond financing.

A table showing the estimated cost of the recommended parking program together with anticipated total parking revenues is shown in Table V.

The initial costs include the amount needed to retire the existing parking lot contracts on July 1, 1957, and the cost of developing the recommended off-street parking program. Annual costs given in the table include the following.

1. Debt retirement

   It is assumed that revenue bonds can be sold to be retired over a period of 20 years bearing an interest rate of 3 1/2 percent.

2. General operating costs

   This item includes the costs of maintenance of the parking lots, periodic cleaning, snow removal and lighting.

3. Meter operating costs

   This item includes the policing, collection of coins, meter repairs, and replacement of meter mechanisms every eight years for the entire parking meter system.

Income figures given in Table V are estimates for the year 1958, the first year the entire program could be in effect. They include revenues anticipated from existing parking meters and from parking meters to be installed as part of the recommended parking program. It is estimated that parking meter revenues will increase at an average rate of one percent a year.

TABLE V

FINANCIAL ANALYSIS
PARKING METER PROGRAM
DOWNTOWN MASON CITY

Initial Costs	
Liquidation of existing parking lot contracts	$ 55,000.00
Acquisition of proposed sites	240,000.00
Improvements	27,000.00
Parking meters	4,500.00
	$ 326,500.00
Annual Costs	
Debt retirement (20 year - 3 1/2 % bonds)	$ 22,870.00
General operating costs	12,000.00
Meter operating costs	17,000.00
	$ 51,870.00
Annual Income	
Existing meters	$ 61,000.00
Proposed curb meters	5,000.00
Proposed alley meters	2,500.00
Proposed offstreet meters	4,800.00
	$ 73,300.00